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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 33

Application Number: 08/634,122
Filing Date: 4/19/96
Appellant(s): Motoki Kato

Heath W. Hoglund (#41,076)
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed as Paper 32 on 12/7/99.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying that there are no related appeals or interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-3, 5, 8-10, and 12-14 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8), and the Examiner agrees with the appellant's grouping of these claims. Group I consists of claims 1 and 2. Group II consists of 3, 5-7, 10, and 12-14. Group III consists of claims 8-9. Each of the respective groups of claims listed above stand and fail together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

5,122,875	Raychaudhuri et al.	6/16/1992
5,343,248	Fujinami	8/30/1994
4,985,766	Morrison et al.	1/15/1991

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3, 5, 8-10, and 12-14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Morrison et al., (hereinafter referred to as "Morrison") in view of Raychaudhuri

et al (hereinafter referred to as "Raychaudhuri"). This rejection was set forth in the Office Action of Paper 22 mailed on 6/30/97 and maintained in the final Office Action of Paper 25 mailed on 3/30/98.

Claims 6-7 are rejected under 35 U.S.C. § 103 as being unpatentable over Morrison in view of Raychaudhuri as applied above, and further in view of Fujinami. This rejection was set forth in the Office Action of Paper 22 mailed on 6/30/97 and maintained in the final Office Action of Paper 25 mailed on 3/30/98.

(11) Response to Argument

Appellant's arguments filed in the brief of Paper 32 on 12/7/99 have been fully considered but they are not persuasive. The Appellant presents five arguments contending the Examiner's rejection of claims 1-3, 5, 8-10, and 12-14 under 35 U.S.C. § 103 as being unpatentable over Morrison et al., (hereinafter referred to as "Morrison") in view of Raychaudhuri et al (hereinafter referred to as "Raychaudhuri"), and the rejection of 6-7 are rejected under 35 U.S.C. § 103 as being unpatentable over Morrison in view of Raychaudhuri as applied above, and further in view of Fujinami, said respective rejections as set forth in the Office Action of Paper 22 mailed on 6/30/97 and maintained in the final Office Action of Paper 25 mailed on 3/30/98. Two arguments are presented against the Group I set of claims. Two arguments are presented against the Group II set of claims. And one argument is presented against the Group III set of claims. However, after a careful consideration of the arguments presented in the brief of Paper 32 filed

on 12/7/99 before the Board of Appeals, the Examiner must respectfully disagree and maintain the rejections, and further submits to the Board of Appeals to uphold said rejections.

I. After outlining the Examiner's rationale for the pending rejections (Paper 32: page 7, lines 6-27; page 8, lines 1-9) and providing a summary of the argument (Paper 32: page 8, lines 10-27; page 9, lines 1-7) that leads the Appellant to conclude that the Examiner has failed to establish a *prima facia* case of obviousness (Paper 32: page 9, lines 7-17), the Appellant argues that the prior art of Morrison fails to address the limitation of claims 1-2 (Group I) that recite "...comparing the first control data with second control data included in a next header of another picture..." and further that it teaches away from the Examiner's combination (Paper 32: page 10, lines 3-9). The Examiner respectfully disagrees. While the Appellant does acknowledge that Morrison does teach a reduction in header data (Paper 32: page 10, lines 12-15), this reduction is hierarchial header structures of group of blocks, and block headers only and both of these types of reductions occur within the same picture (Paper 32: page 10, lines 23-27). And if this is all the header reduction that takes place in Morrison, the Examiner's position would be incorrect. However, the Examiner submits that this is not all of the header reduction techniques executed by the system of the reference, and that header reduction takes place on consecutive picture headers, as well, and when established by the Examiner, this type of header reduction as executed on picture headers would read on the "...comparing the first control data with second control data included in a next header of another picture..." limitations of the claims. As noted by the

Appellant (Paper 32: page 10, lines 14-18) Morrison teaches the hierarchy of headers with the highest level corresponding to the picture header for each respective picture (Morrison: column 4, lines 53-58), where each picture header might further have coding parameters pertaining to that whole picture (Morrison: column 4, lines 43-46). Now we look at how Morrison manipulates these picture headers. Morrison discloses storing *picture header sequences* in the write control unit (Morrison: column 5, lines 3-10). Morrison further discloses that a decision process executed in said control unit (Morrison: column 5, lines 12-13) is operative upon picture header sequences to omit certain overheads when they contain redundant information (Morrison: column 5, lines 14-22). This decision process corresponds to the "comparing operation" of the claims, and if it is shown to be executed on multiple picture headers, such a step would read on the claims. The Examiner notes that mentioning a *picture header sequence* (Morrison: column 5, lines 3-4 or lines 15-16) establishes that Morrison manipulates *plural picture headers,* because a picture header sequence by simple definition comprises multiple picture headers (i.e. a sequence of picture headers). Furthermore, since there is only one picture header per picture, this means that picture header sequences as discussed by the (Morrison: column 5, lines 15-16) corresponds to a group of pictures, such as is discussed by the Appellant (Paper 32: page 5, lines 5-15: figure 5). This also means that Morrison is concerned with not just concerned with headers within a single picture, but with a plurality of picture headers across a picture boundary. Furthermore, Morrison discloses performing the aforementioned decision process on the *picture header sequences* (i.e. at the picture header level in comparison with other picture headers in the sequence), and as a result

of the decision making process, discloses a condition where a reduction operation of picture header sequences occurs. Of the four possible combinations of transmitted data, condition four represents a case where a picture header has omitted information in it (Morrison: column 5, lines 42-45). We look at the case where a picture header sequence pertaining to a plurality of picture headers has been stored in the write control unit (Morrison: column 2, element 27), and where a decision making process executed therein calculates which one of the picture header overheads in said stored picture header sequences can be omitted (Morrison: column 5, lines 10-20). When such a determination is made, case four says that on a picture level, only coefficient data and no overheads for that picture header is read out (Morrison: column 5, lines 43-45). A specific condition would be when the group header overhead contains sufficient information that the redundant picture header overhead information doesn't need to be transmitted with the picture header, or when the previously transmitted picture header overhead already had sufficient information that the current picture header overhead information would be redundant, and thus that current picture header overhead is not transmitted (Morrison: column 5, lines 15-17). In this case, the header overhead reduction process is executed at a point that is extends across a picture boundary, and the information that would be omitted, such as motion vector information (Morrison: column 5, lines 17-22), or quantization parameters (Morrison: column 4, line 44), and does read upon the claimed limitation as claims 1 and 2.

Secondly, the Appellant argues that based on the functioning of Morrison's decoder, the system also teaches away from making a comparison of headers, such as picture headers, across a

picture boundary, because the decoder fails to save any state information associated with a previous picture is lost upon the receipt when a new picture in the decoder (Paper 32: page 12, lines 9-27). The Examiner respectfully disagrees. In actuality, the functioning of the decoder only goes on further to prove the Examiner's position. Firstly, as discussed above, the encoder will not send any picture level header data containing redundant overheads, so every new picture header received has only new overhead information that the decoder doesn't already have on hand. While this means that picture headers are always transmitted per picture, the amount of overheads associated with consecutive picture headers are different. For example, we take the case where for a picture header sequence for a corresponding group of pictures is presented to an encoder. In processing the picture header sequence, a current picture header and its overheads containing coding parameters is compared with a preceding picture header and its overheads containing coding parameters, and if redundant, the overheads of the current picture header are omitted as a part of the encoding process (Morrison: column 5, lines 15-20 & 43-48). Assuming this is the case, the preceding picture header containing the overheads pertaining coding parameters along with the preceding picture and the current picture are transmitted (Morrison: column 7, lines 1-25) to the decoder (Morrison: figure 3). The transmitted preceding picture and its associated picture header containing overheads pertaining to coding parameters pertaining to the preceding picture and the current picture are identified by the decoder by the start code of the received preceding picture header (Morrison: column 7, lines 63-65), and the associated overheads containing coding parameters are decoded and used to decode that preceding picture (Morrison:

column 9, lines 5-10). Now, back on the encoding side, the current picture and the current picture header with its omitted overheads is transmitted to the decoder, and when detected by the decoder by the start code, the decoder knows the overheads associated with the preceding picture can be used to decode the current picture (Morrison: column 8, lines 60-68). All the picture headers received contain start codes for synchronization purposes, but other than that, the overheads of consecutively received contained there would be different, with an absence of overheads in picture headers being taken into account by the sequencer of the decoder (Morrison: column 8, lines 14-18). Furthermore, the resetting operation of the decoder (Morrison: column 8, lines 10-14) as referenced by the Appellant (Paper 32: page 12, lines 10-13), is in response to a detected error of a start code (Morrison: column 7, lines 65-68), and thus that sent picture header and associated overheads are assumed to be corrupted, and resetting to a base address gives the decoder access to overheads from the preceding picture that can be used to decode the current picture (Morrison: column 8, lines 11-14). Additionally, the Examiner notes that the use of a repeating operation as discussed by Morrison also supports about storing overhead or state information for the previous picture when a current picture start code has not been received (Morrison: column 9, lines 22-31). Accordingly, the Examiner maintains that the decoder does function in a manner that is consistent with picture header reductions across picture boundaries, more particularly with omitted overheads.

II. Firstly, the Appellant argues that based on the functioning of Morrison's decoder, the system also teaches away from making a comparison of headers, such as picture headers, across a picture boundary, because the decoder fails to save any state information associated with a previous picture is lost upon the receipt when a new picture in the decoder (Paper 32: page 13, lines 5-17), and that this feature distinguishes Group II's set of claims 3, 5-7, and 10-14 over the art of record. The Examiner respectfully disagrees. In actuality, the functioning of the decoder proves the Examiner's position. Firstly, as discussed above in connection with the Group I claims, the encoder will not send any picture level header data containing redundant overheads, so every new picture header received has only new overhead information that the decoder doesn't already have on hand. While this means that picture headers are always transmitted per picture, the amount of overheads associated with consecutive picture headers are different. For example, we take the case where for a picture header sequence for a corresponding group of pictures is presented to an encoder. In processing the picture header sequence, a current picture header and its overheads containing coding parameters is compared with a preceding picture header and its overheads containing coding parameters, and if redundant, the overheads of the current picture header are omitted as a part of the encoding process (Morrison: column 5, lines 15-20 & 43-48). Assuming this is the case, the preceding picture header containing the overheads pertaining coding parameters along with the preceding picture and the current picture are transmitted (Morrison: column 7, lines 1-25) to the decoder (Morrison: figure 3). The transmitted preceding picture and its associated picture header containing overheads pertaining to coding parameters pertaining to

the preceding picture and the current picture are identified by the decoder by the start code of the received preceding picture header (Morrison: column 7, lines 63-65), and the associated overheads containing coding parameters are decoded and used to decode that preceding picture (Morrison: column 9, lines 5-10). Now, back on the encoding side, the current picture and the current picture header with its omitted overheads is transmitted to the decoder, and when detected by the decoder by the start code, the decoder knows the overheads associated with the preceding picture can be used to decode the current picture (Morrison: column 8, lines 60-68). All the picture headers received contain start codes for synchronization purposes, but other than that, the overheads of consecutively received contained there would be different, with an absence of overheads in picture headers being taken into account by the sequencer of the decoder (Morrison: column 8, lines 14-18). Furthermore, the resetting operation of the decoder (Morrison: column 8, lines 10-14) as referenced by the Appellant (Paper 32: page 12, lines 10-13), is in response to a detected error of a start code (Morrison: column 7, lines 65-68), and thus that sent picture header and associated overheads are assumed to be corrupted, and resetting to a base address gives the decoder access to overheads from the preceding picture that can be used to decode the current picture (Morrison: column 8, lines 11-14). Additionally, the Examiner notes that the use of a repeating operation as discussed by Morrison also supports about storing overhead or state information for the previous picture when a current picture start code has not been received (Morrison: column 9, lines 22-31), as in claims 3, 5-7, and 10 and 12-14.

Secondly, the Appellant makes the point that the claimed invention has the condition of not only reducing the amount of data between consecutive picture headers by reduction of the respective amounts data therein, but of also eliminating a picture header entirely as a result of the header comparison process (Paper 32: page 13, lines 19-23), and that Morrison fails to suggest such a step. The Examiner respectfully disagrees. The Appellant has equated that fact that Morrison always transmit a picture start code with every picture to Morrison always transmitting a picture header with overheads (Morrison: column 7, lines 63-65; column 8, lines 52-55; column 9, lines 22-24). The Examiner asserts that this does not have to be the case. It is duly noted that a picture code is always transmitted with each encoded picture and is necessary for synchronization of the decoding process (Morrison: column 8, lines 49-56). However, going back to Morrison's description of the header hierarchy, the reference discloses that the picture header *may include some or all of the following:* start code, buffer state, picture number, picture type (Morrison: column 4, lines 50-57). It would be obvious to one of ordinary skill in the art that the executed decision making process that renders a picture header empty of coding information if redundant overheads are omitted (Morrison: column 5, lines 10-20). As a result of this, the picture headers themselves may only consist of the start code as these start codes would still need to be transmitted for synchronization for every picture. Based on the fact that Morrison discloses that a picture start code doesn't always have to be included in a picture header, one of ordinary skill in art would be motivated to further make the coding process more efficient by eliminating a picture header containing nothing more than picture start code, and transmit the start code outside of the

picture header. The adaptive nature of what a picture header is supported by Morrison's conditional definition of what a picture header contains and provides further motivation to allocate certain types of information outside of certain header levels in the disclosed hierarchy, by overhead omission of redundant information, and by suggesting that starts codes are not always constrained to be in a picture header (Morrison: column 4, lines 50-54). Motivation of such a maneuver would to have an optimal arrangement of coding control information that would reduce the overall quantity of data should (Morrison: column 4, lines 42-44). Accordingly, by allowing the placement of the start code such that it is transmitted with every picture but outside of the picture header, therefore allowing that picture header to be completely deleted if the decision making process deems that all its other overheads can be omitted, Morrison's encoder would function in the way of claims 3, 5-7 10, and 12-14 by totally omitting a picture header, while always providing a picture start code.

III. Lastly, the Appellant argues that Raychaudhuri in as incorporated into the Morrison reference fails to address the limitation of claims 8-9 (Group III) that recite "...comparing the first control data with second control data included in a next header of another picture..." of the disclosed invention (Paper 32: page 14, lines 8-15). In response to Appellant's arguments against the Raychaudhuri individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375

(Fed. Cir. 1986). As discussed above, the Examiner maintains that the primary Morrison reference addresses this limitation, and therefore the combination would Raychaudhuri would also do the same as those features were not eliminated during the incorporation with the secondary Raychaudhuri reference.

For the above reasons, it is believed that the rejection should be sustained.

Respectfully submitted,

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ANDY RAO
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asr
February 3, 2000

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